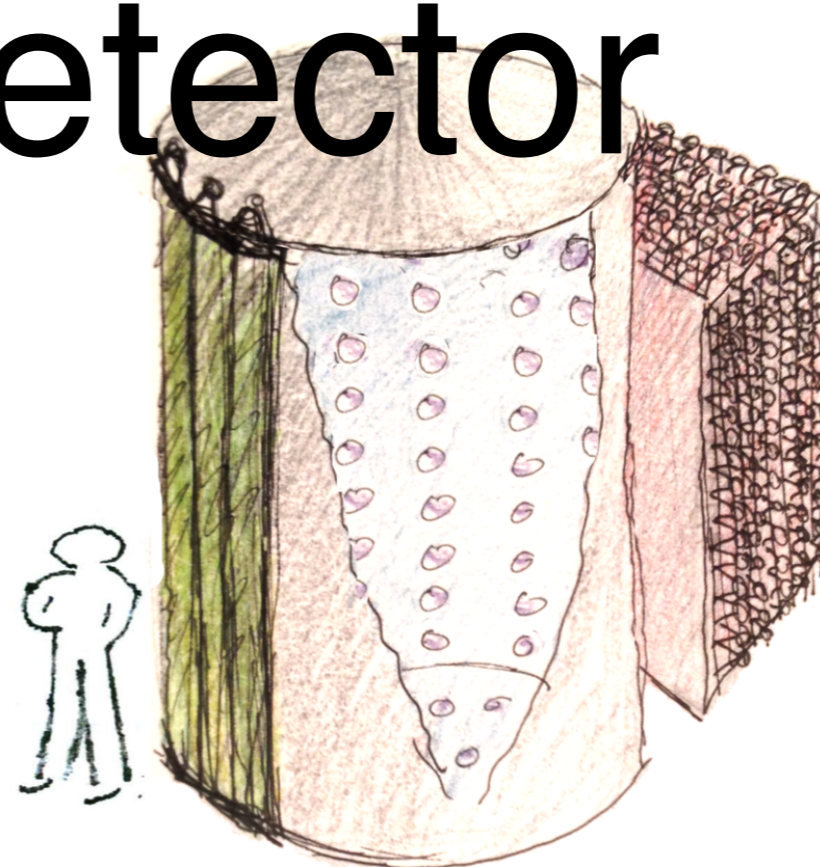
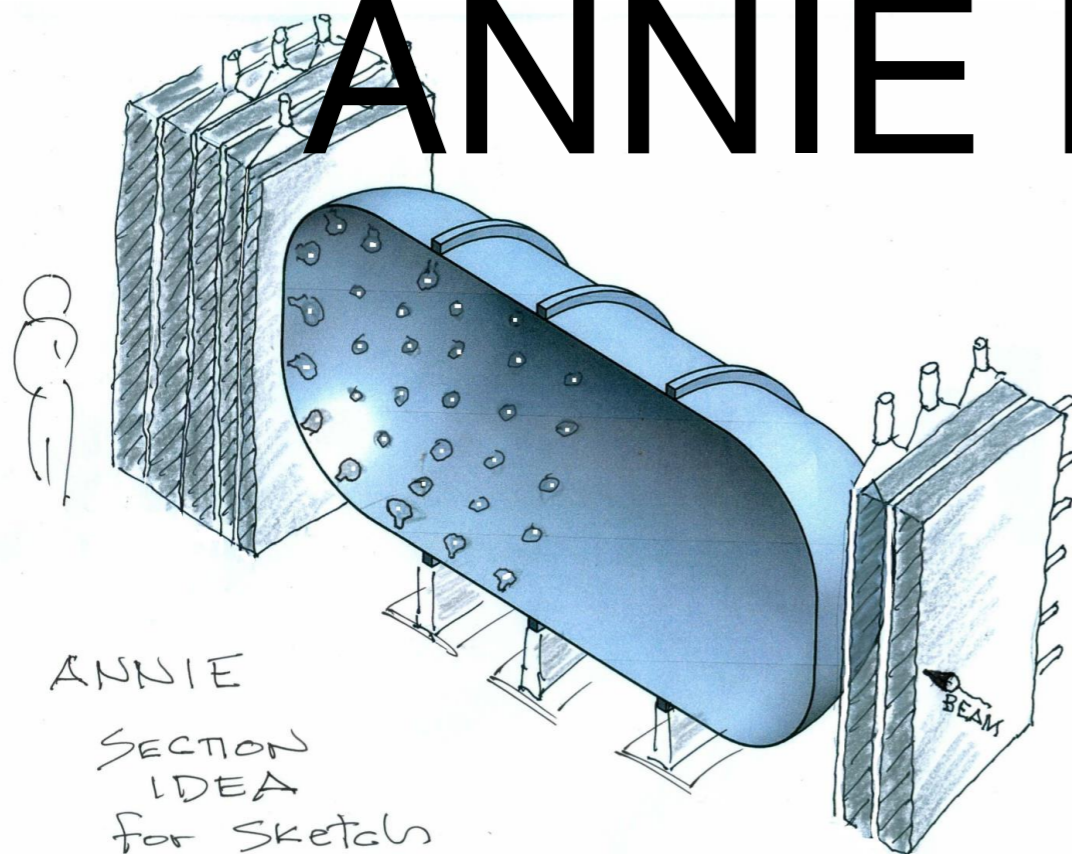
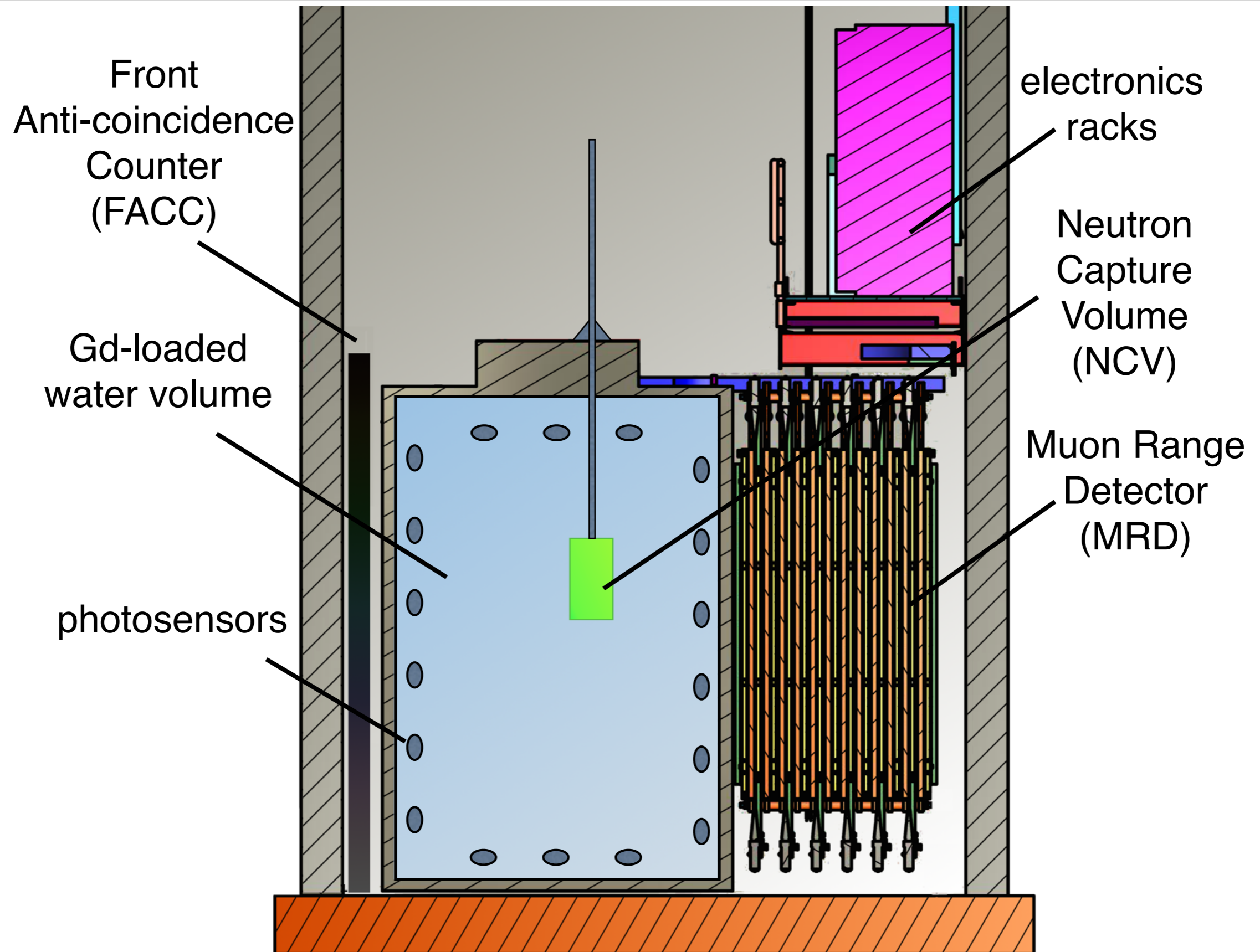


Mechanical Overview:

ANNIE Detector





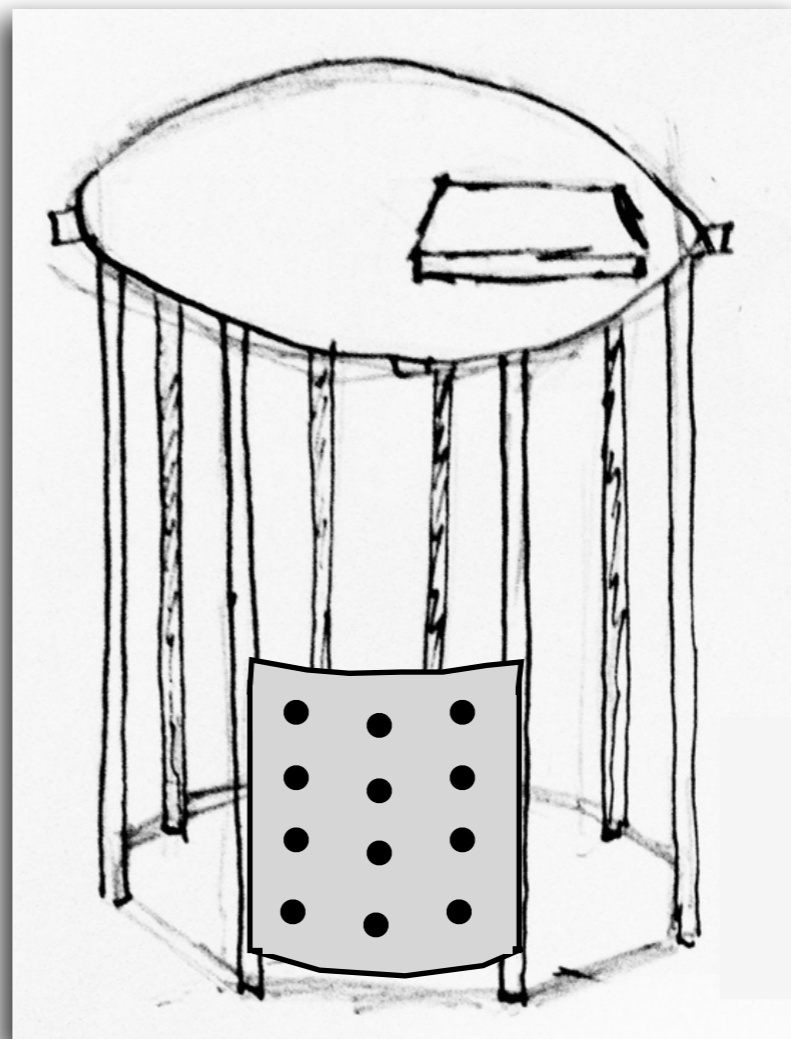
Relevant components of the build

- **The Tank:** The water storage volume: 10ft x 13 ft
- **Inner Structure:** The snap-together frame inside the tank, supporting the PMTs
- **PMT holders:** The mechanical supports bracing each PMT
- **Neutron Capture Volume (NCV):** The inner acrylic volume containing Gd-loaded scintillator, to be moved around in the water volume
- **Access Platform:** The platform built around the tank in the SciBooNE Hall.
- **Staging Platform:** The structure built to support the top of the tank while the inner, PMT-structure is assembled.

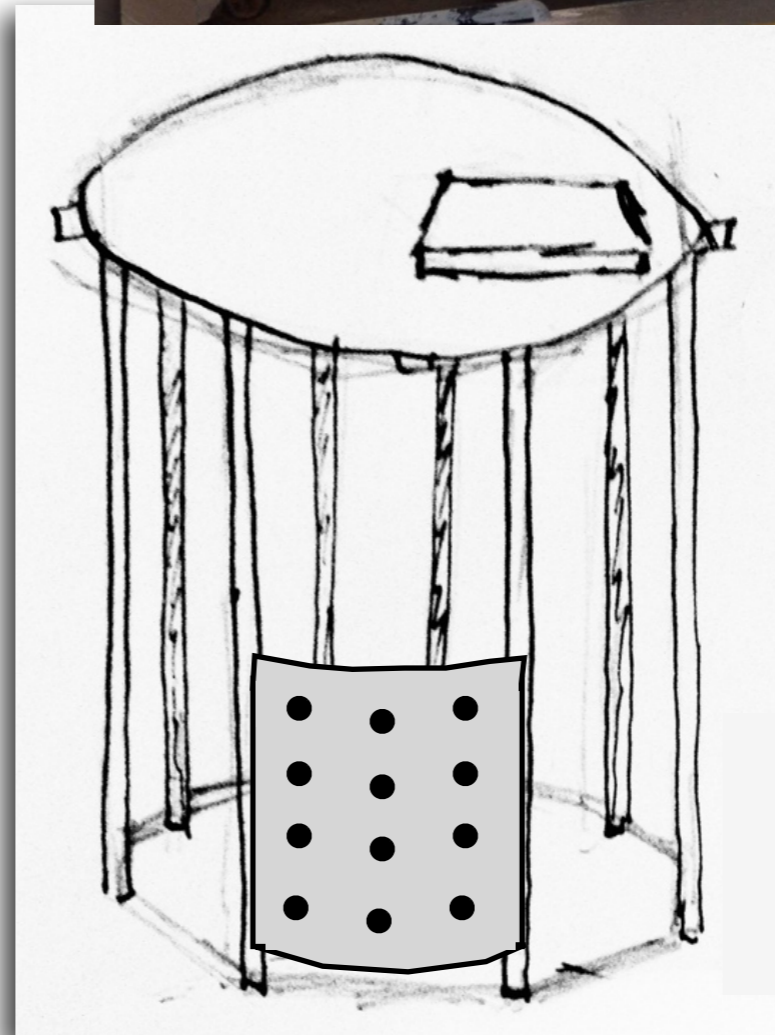
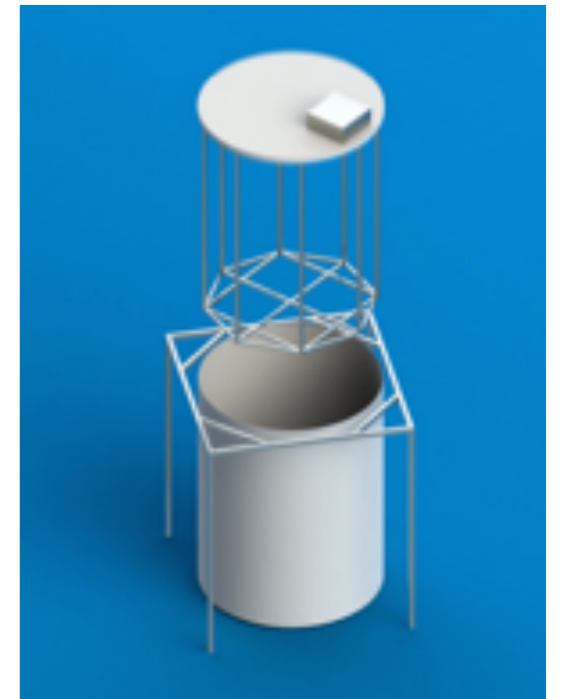


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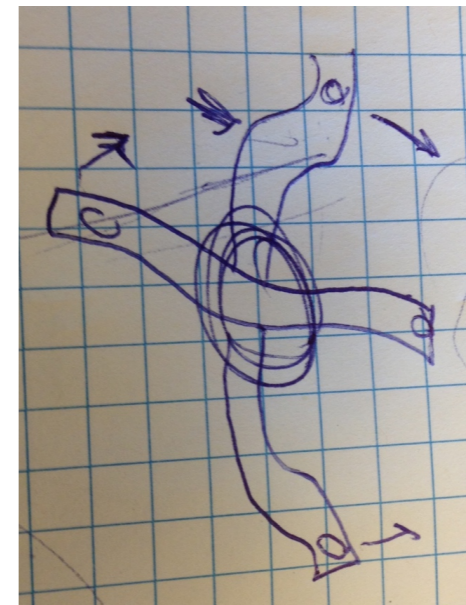


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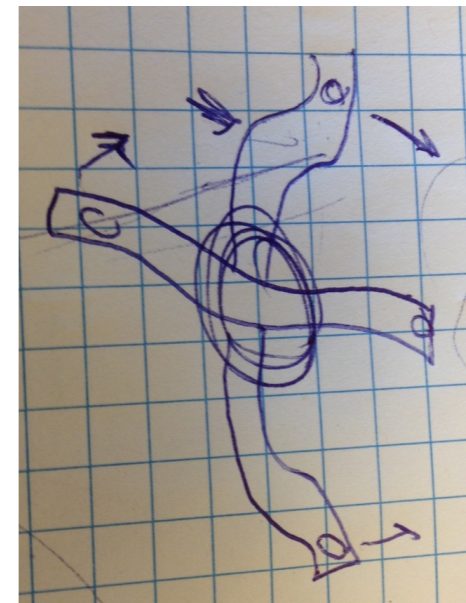
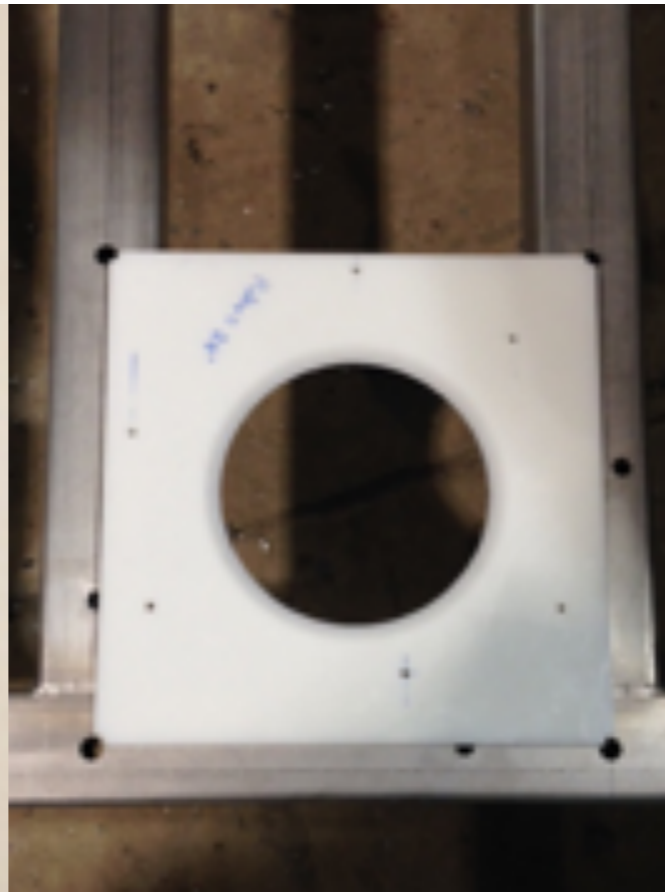
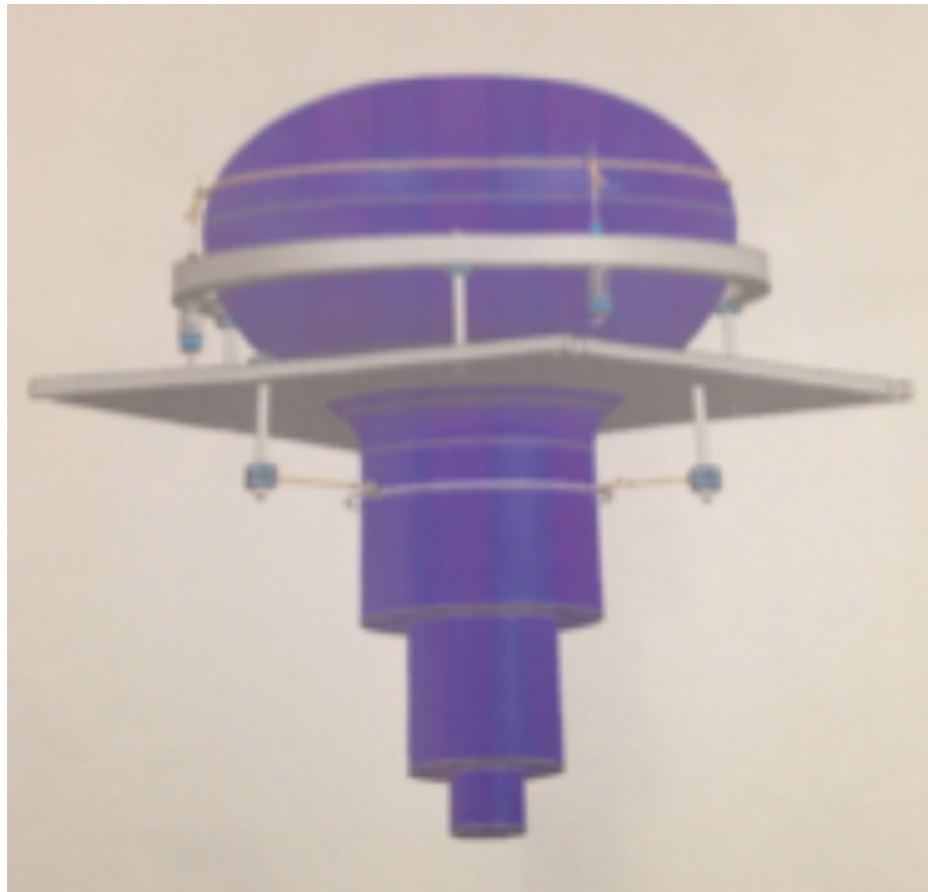
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(see Carrie's talk)

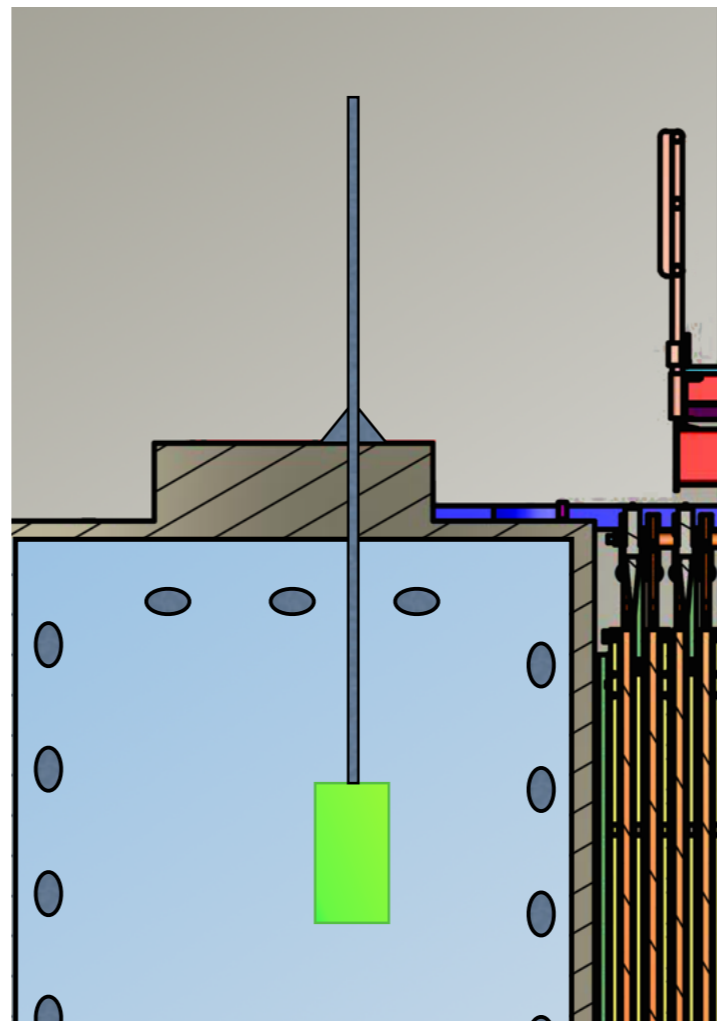
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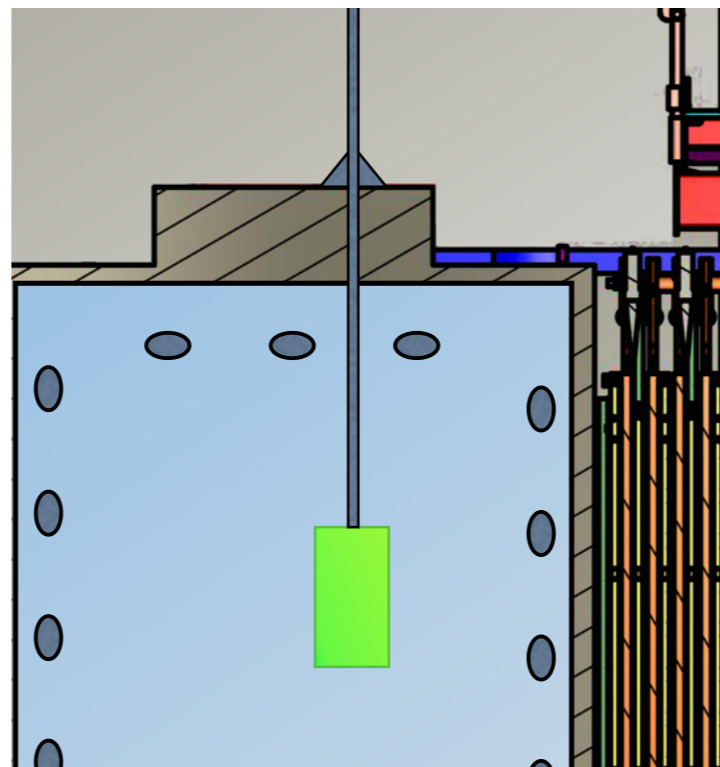
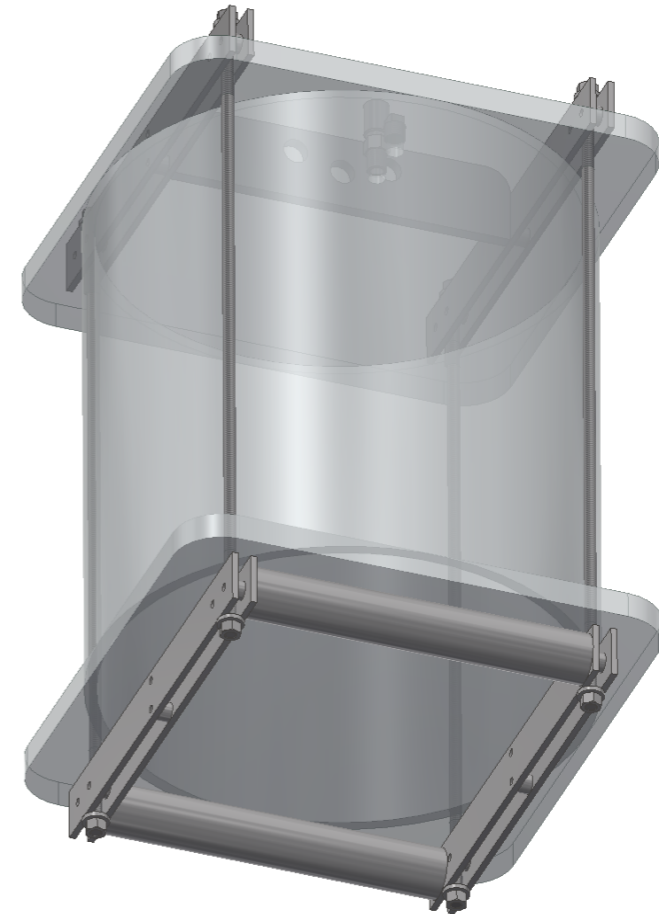
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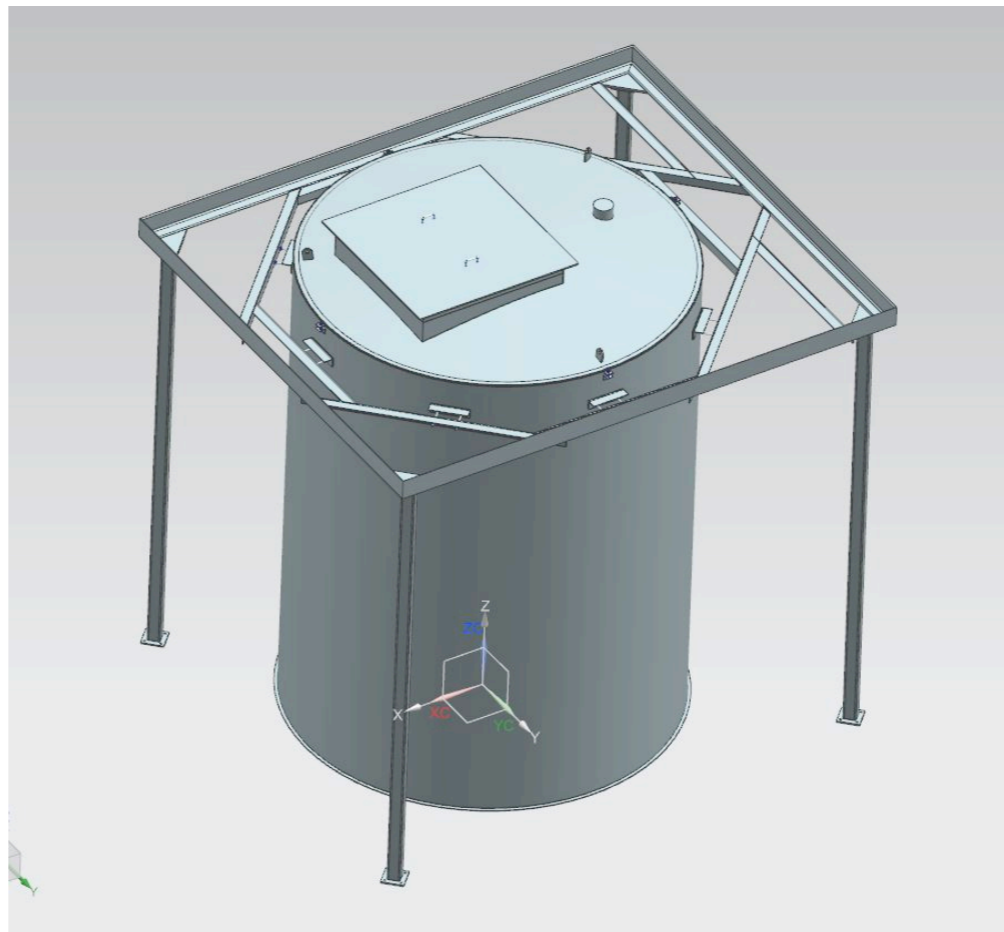


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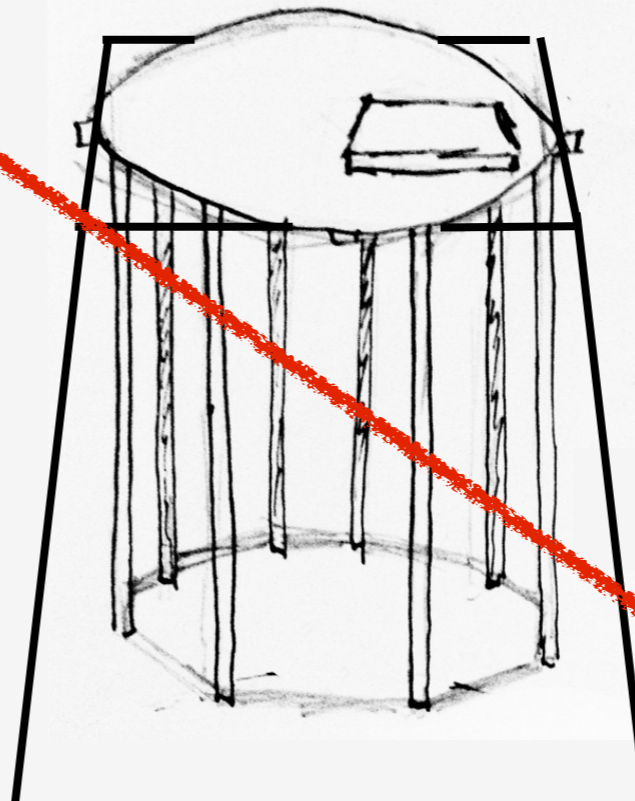
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not needed: the
inner structure is
self supporting



A design for feedthroughs:

- gas exchange
- water
- cables
- hatch/NCV

Needs to be light tight!!!

Feedthroughs, feedthroughs, feedthroughs



Outline - construction steps

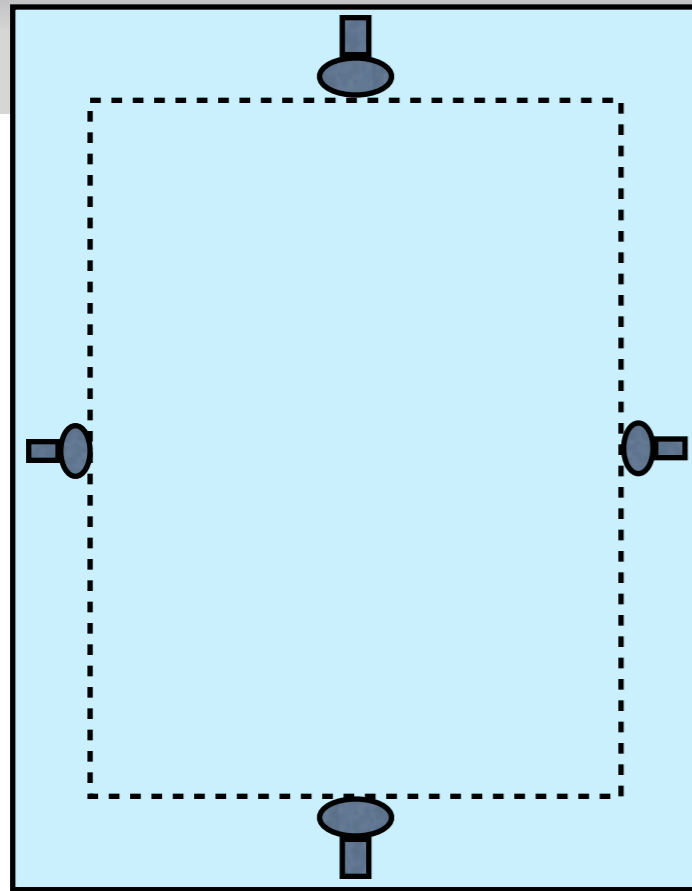


- Remove the top of the tank, attach flanged tabs on the top and body of the tank
- Modify tank top, add needed feedthroughs
- Set the top of the tank on a staging platform at the D0 Assembly Building (DAB)
- Collaboration assembles PVC-based snap-together structure for supporting the PMTs, with the PMT holder components.
- This PVC structure is attached to the top of the tank.
- Inner liner placed in tank
- Tank and inner structure are transported to ANNIE hall and lowered
- Access platform installed
- Water fill
- NCV installed

Outline - construction steps



- ✓ • Remove the top of the tank, attach flanged tabs on the top and body of the tank
- ✓ • Modify tank top, add needed feedthroughs
- ✓ • Set the top of the tank on a staging platform at the D0 Assembly Building (DAB)
- ✓ • *FNAL engineering assembles a stainless steel structure* for supporting the PMTs, with the PMT holder components.
- ✓ • This structure is attached to the top of the tank.
- ✓ • Inner liner placed in tank
- ✓ • Tank and inner structure are transported to ANNIE hall and lowered
- ✓ • Access platform installed
- ✓ • Water fill
- ✓ • NCV installed



Phase II

Inner (PMT) Structure

Full volume: 10 ft (dia) x 13 ft (height)

Effective volume: 8 ft (dia) x 9 ft (height)

$$A_{\text{cap}}/A_{\text{wall}} = 100/226$$

60 x 8" PMTs:

- 10 on top
- 10 on bottom
- 40 on wall

200 x 8" PMTs:

- 34 on top
- 34 on bottom
- 132 on wall

60 x 8", 45 x 10", 20 x 11" PMTs:

- 10 x 11" and 8 x 8" on top
- 10 x 11" and 8 x 8" on bottom
- 44 x 8" and 45 x 10" on wall

For more detail, see: ANNIE TSW
docdb: [ANNIE-doc-144-v1](#)